

Polymorphism	Heterozygous	Homozygous
Nod2Δ33	1.5	17.6
G908R	2.0	34.5
R702W	2.6	14.3

THE UNIVERSITY OF CHICAGO

15

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10002974.12601

<130> UM-06646

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<170> PatentIn version 3.1

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5	Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val Lys Ala	180	185	190
10	Asn Gly Leu Ala Ala Phe Leu Leu Gln His Val Gln Glu Leu Pro Val	195	200	205
15	Pro Leu Ala Leu Pro Leu Glu Ala Ala Thr Cys Lys Lys Tyr Met Ala	210	215	220
20	Lys Leu Arg Thr Thr Val Ser Ala Gln Ser Arg Phe Leu Ser Thr Tyr	225	230	235
25	Asp Gly Ala Glu Thr Leu Cys Leu Glu Asp Ile Tyr Thr Glu Asn Val	245	250	255
30	Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly Pro Pro Gln Lys Ser	260	265	270
35	Pro Ala Thr Leu Gly Leu Glu Glu Leu Phe Ser Thr Pro Gly His Leu	275	280	285
40	Asn Asp Asp Ala Asp Thr Val Leu Val Val Gly Glu Ala Gly Ser Gly	290	295	300
45	Lys Ser Thr Leu Leu Gln Arg Leu His Leu Leu Trp Ala Ala Gly Gln	305	310	315
50	Asp Phe Gln Glu Phe Leu Phe Val Phe Pro Phe Ser Cys Arg Gln Leu	325	330	335
55	Gln Cys Met Ala Lys Pro Leu Ser Val Arg Thr Leu Leu Phe Glu His	340	345	350
60	Cys Cys Trp Pro Asp Val Gly Gln Glu Asp Ile Phe Gln Leu Leu Leu	355	360	365
65	Asp His Pro Asp Arg Val Leu Leu Thr Phe Asp Gly Phe Asp Glu Phe	370	375	380
70	Lys Phe Arg Phe Thr Asp Arg Glu Arg His Cys Ser Pro Thr Asp Pro			

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5	Thr Ser Val Gln	Thr Leu Leu Phe	Asn Leu Leu Gln	Gly Asn Leu Leu			
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10	Lys Asn Ala Arg	Lys Val Val Thr	Ser Arg Pro Ala	Ala Val Ser Ala			
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15	Phe Leu Arg Lys	Tyr Ile Arg Thr	Glu Phe Asn Leu	Lys Gly Phe Ser			
		435		440		445	
20	Glu Gln Gly Ile	Glu Leu Tyr Leu	Arg Lys Arg His	His Glu Pro Gly			
		450		455		460	
25	Val Ala Asp Arg	Leu Ile Arg Leu	Leu Gln Glu Thr	Ser Ala Leu His			
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30	Gly Leu Cys His	Leu Pro Val Phe	Ser Trp Met Val	Ser Lys Cys His			
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35	Gln Glu Leu Leu	Leu Gln Glu Gly	Gly Ser Pro Lys	Thr Thr Thr Asp			
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40	Met Tyr Leu Leu	Ile Leu Gln His	Phe Leu Leu His	Ala Thr Pro Pro			
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45	Asp Ser Ala Ser	Gln Gly Leu Gly	Pro Ser Leu Leu	Arg Gly Arg Leu			
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50	Pro Thr Leu Leu	His Leu Gly Arg	Leu Ala Leu Trp	Gly Leu Gly Met			
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55	Cys Cys Tyr Val	Phe Ser Ala Gln	Gln Leu Gln Ala	Ala Gln Val Ser			
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60	Pro Asp Asp Ile	Ser Leu Gly Phe	Leu Val Arg Ala	Lys Gly Val Val			
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65	Pro Gly Ser Thr	Ala Pro Leu Glu	Phe Leu His Ile	Thr Phe Gln Cys			
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70	Phe Phe Ala Ala	Phe Tyr Leu Ala	Leu Ser Ala Asp	Val Pro Pro Ala			
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 Ala Arg Leu Leu Pro Thr Met Cys Ile Gln Ala Ser Glu Gly Lys Asp
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 10 Ser Ser Val Ala Ala Leu Leu Gln Lys Ala Glu Pro His Asn Leu Gln
 660 665 670
 15 Ile Thr Ala Ala Phe Leu Ala Gly Leu Leu Ser Arg Glu His Trp Gly
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 20 Leu Leu Ala Glu Cys Gln Thr Ser Glu Lys Ala Leu Leu Arg Arg Gln
 690 695 700
 25 Ala Cys Ala Arg Trp Cys Leu Ala Arg Ser Leu Arg Lys His Phe His
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 Ser Ile Pro Pro Ala Ala Pro Gly Glu Ala Lys Ser Val His Ala Met
 725 730 735
 30 Pro Gly Phe Ile Trp Leu Ile Arg Ser Leu Tyr Glu Met Gln Glu Glu
 740 745 750
 35 Arg Leu Ala Arg Lys Ala Ala Arg Gly Leu Asn Val Gly His Leu Lys
 755 760 765
 40 Leu Thr Phe Cys Ser Val Gly Pro Thr Glu Cys Ala Ala Leu Ala Phe
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 45 Val Leu Gln His Leu Arg Arg Pro Val Ala Leu Gln Leu Asp Tyr Asn
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 50 Cys Lys Ala Leu Tyr Leu Arg Asp Asn Asn Ile Ser Asp Arg Gly Ile
 820 825 830
 55 Cys Lys Leu Ile Glu Cys Ala Leu His Cys Glu Gln Leu Gln Lys Leu
 835 840 845

Ala Leu Phe Asn Asn Lys Leu Thr Asp Gly Cys Ala His Ser Met Ala
850 855 860

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Lys Leu Leu Ala Cys Arg Gln Asn Phe Leu Ala Leu Arg Leu Gly Asn
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10

Asn Tyr Ile Thr Ala Ala Gly Ala Gln Val Leu Ala Glu Gly Leu Arg
885 890 895

15

Gly Asn Thr Ser Leu Gln Phe Leu Gly Phe Trp Gly Asn Arg Val Gly
900 905 910

20

Asp Glu Gly Ala Gln Ala Leu Ala Glu Ala Leu Gly Asp His Gln Ser
915 920 925

Leu Arg Trp Leu Ser Leu Val Gly Asn Asn Ile Gly Ser Val Gly Ala
930 935 940

25

Gln Ala Leu Ala Leu Met Leu Ala Lys Asn Val Met Leu Glu Glu Leu
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Cys Leu Glu Glu Asn His Leu Gln Asp Glu Gly Val Cys Ser Leu Ala
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Glu Gly Leu Lys Lys Asn Ser Ser Leu Lys Ile Leu Lys Leu Ser Asn
980 985 990

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Asn Cys Ile Thr Tyr Leu Gly Ala Glu Ala Leu Leu Gln Ala Leu Glu
995 1000 1005

Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly Asn Thr Phe
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Ser Leu Glu Glu Val Asp Lys Leu Gly Cys Arg Asp Thr Arg Leu
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Leu Leu
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Leu Leu Ser Trp Glu Val Leu Ser Trp Glu Asp Tyr Glu Gly Phe His
35 40 45

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Leu Leu Gly Gln Pro Leu Ser His Leu Ala Arg Arg Leu Leu Asp Thr
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25 Val Trp Asn Lys Gly Thr Trp Ala Cys Gln Lys Leu Ile Ala Ala Ala
65 70 75 80

30 Gln Glu Ala Gln Ala Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp
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35 Asp Pro His Ser Leu His Pro Ala Arg Asp Leu Gln Ser His Arg Pro
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Ala Ile Val Arg Arg Leu His Ser His Val Glu Asn Met Leu Asp Leu
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Ala Trp Glu Arg Gly Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg
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45 Leu Pro Ile Phe Thr Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu
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50 Ala Thr Val Lys Ala Asn Gly Leu Ala Ala Phe Leu Leu Gln His Val
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Gln Glu Leu Pro Val Pro Leu Ala Leu Pro Leu Glu Ala Ala Thr Cys
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Lys Lys Tyr Met Ala Lys Leu Arg Thr Thr Val Ser Ala Gln Ser Arg

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195

200

205

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10 Tyr Thr Glu Asn Val Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly
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Pro Pro Gln Lys Ser Pro Ala Thr Leu Gly Leu Glu Glu Leu Phe Ser
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15 Thr Pro Gly His Leu Asn Asp Asp Ala Asp Thr Val Leu Val Val Gly
260 265 270

20 Glu Ala Gly Ser Gly Lys Ser Thr Leu Leu Gln Arg Leu His Leu Leu
275 280 285

25 Trp Ala Ala Gly Gln Asp Phe Gln Glu Phe Leu Phe Val Phe Pro Phe
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30 Ser Cys Arg Gln Leu Gln Cys Met Ala Lys Pro Leu Ser Val Arg Thr
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Leu Leu Phe Glu His Cys Cys Trp Pro Asp Val Gly Gln Glu Asp Ile
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35 Phe Gln Leu Leu Leu Asp His Pro Asp Arg Val Leu Leu Thr Phe Asp
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40 Gly Phe Asp Glu Phe Lys Phe Arg Phe Thr Asp Arg Glu Arg His Cys
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45 Ser Pro Thr Asp Pro Thr Ser Val Gln Thr Leu Leu Phe Asn Leu Leu
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50 Gln Gly Asn Leu Leu Lys Asn Ala Arg Lys Val Val Thr Ser Arg Pro
385 390 395 400

Ala Ala Val Ser Ala Phe Leu Arg Lys Tyr Ile Arg Thr Glu Phe Asn
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55 Leu Lys Gly Phe Ser Glu Gln Gly Ile Glu Leu Tyr Leu Arg Lys Arg
420 425 430

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5 His His Glu Pro Gly Val Ala Asp Arg Leu Ile Arg Leu Leu Gln Glu
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 10 Thr Ser Ala Leu His Gly Leu Cys His Leu Pro Val Phe Ser Trp Met
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 15 Val Ser Lys Cys His Gln Glu Leu Leu Leu Gln Glu Gly Gly Ser Pro
 465 470 475 480

 20 Lys Thr Thr Thr Asp Met Tyr Leu Leu Ile Leu Gln His Phe Leu Leu
 485 490 495

 25 His Ala Thr Pro Pro Asp Ser Ala Ser Gln Gly Leu Gly Pro Ser Leu
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 30 Leu Arg Gly Arg Leu Pro Thr Leu Leu His Leu Gly Arg Leu Ala Leu
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 35 Trp Gly Leu Gly Met Cys Cys Tyr Val Phe Ser Ala Gln Gln Leu Gln
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 40 Ala Ala Gln Val Ser Pro Asp Asp Ile Ser Leu Gly Phe Leu Val Arg
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 45 Ala Lys Gly Val Val Pro Gly Ser Thr Ala Pro Leu Glu Phe Leu His
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 50 Ile Thr Phe Gln Cys Phe Phe Ala Ala Phe Tyr Leu Ala Leu Ser Ala
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 55 Asp Val Pro Pro Ala Leu Leu Arg His Leu Phe Asn Cys Gly Arg Pro
 595 600 605

 60 Gly Asn Ser Pro Met Ala Arg Leu Leu Pro Thr Met Cys Ile Gln Ala
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 65 Ser Glu Gly Lys Asp Ser Ser Val Ala Ala Leu Leu Gln Lys Ala Glu
 625 630 635 640

 70 Pro His Asn Leu Gln Ile Thr Ala Ala Phe Leu Ala Gly Leu Leu Ser
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			675					680					685				
10	Arg	Lys	His	Phe	His	Ser	Ile	Pro	Pro	Ala	Ala	Pro	Gly	Glu	Ala	Lys	
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15	Ser	Val	His	Ala	Met	Pro	Gly	Phe	Ile	Trp	Leu	Ile	Arg	Ser	Leu	Tyr	
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20	Glu	Met	Gln	Glu	Glu	Arg	Leu	Ala	Arg	Lys	Ala	Ala	Arg	Gly	Leu	Asn	
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25	Val	Gly	His	Leu	Lys	Leu	Thr	Phe	Cys	Ser	Val	Gly	Pro	Thr	Glu	Cys	
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			755					760					765				
35	Gln	Leu	Asp	Tyr	Asn	Ser	Val	Gly	Asp	Ile	Gly	Val	Glu	Gln	Leu	Leu	
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55	Ala	His	Ser	Met	Ala	Lys	Leu	Leu	Ala	Cys	Arg	Gln	Asn	Phe	Leu	Ala	
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60	Leu	Arg	Leu	Gly	Asn	Asn	Tyr	Ile	Thr	Ala	Ala	Gly	Ala	Gln	Val	Leu	
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65	Ala	Glu	Gly	Leu	Arg	Gly	Asn	Thr	Ser	Leu	Gln	Phe	Leu	Gly	Phe	Trp	
	865					870					875					880	

Gly Asn Arg Val Gly Asp Glu Gly Ala Gln Ala Leu Ala Glu Ala Leu
885 890 895

5 Gly Asp His Gln Ser Leu Arg Trp Leu Ser Leu Val Gly Asn Asn Ile
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10 Gly Ser Val Gly Ala Gln Ala Leu Ala Leu Met Leu Ala Lys Asn Val
915 920 925

15 Met Leu Glu Glu Leu Cys Leu Glu Glu Asn His Leu Gln Asp Glu Gly
930 935 940

Val Cys Ser Leu Ala Glu Gly Leu Lys Lys Asn Ser Ser Leu Lys Ile
945 950 955 960

20 Leu Lys Leu Ser Asn Asn Cys Ile Thr Tyr Leu Gly Ala Glu Ala Leu
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25 Leu Gln Ala Leu Glu Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg
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30 Gly Asn Thr Phe Ser Leu Glu Glu Val Asp Lys Leu Gly Cys Arg Asp
995 1000 1005

35 Thr Arg Leu Leu Leu
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<213> Homo sapiens

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Ser Val Leu Leu Gly His Ser Pro Gly Cys Glu Met Cys Ser Gln Glu
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Ala Phe Gln Ala Gln Arg Ser Gln Leu Val Glu Leu Leu Val Ser Gly

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5	Ser Leu Glu Gly Phe Glu Ser Val Leu Asp Trp Leu Leu Ser Trp Glu 50 55 60		
10	Val Leu Ser Trp Glu Asp Tyr Glu Gly Phe His Leu Leu Gly Gln Pro 65 70 75 80		
15	Leu Ser His Leu Ala Arg Arg Leu Leu Asp Thr Val Trp Asn Lys Gly 85 90 95		
20	Thr Trp Ala Cys Gln Lys Leu Ile Ala Ala Ala Gln Glu Ala Gln Ala 100 105 110		
25	Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp Asp Pro His Ser Leu 115 120 125		
30	His Pro Ala Arg Asp Leu Gln Ser His Arg Pro Ala Ile Val Arg Arg 130 135 140		
35	Leu His Ser His Val Glu Asn Met Leu Asp Leu Ala Trp Glu Arg Gly 145 150 155 160		
40	Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg Leu Pro Ile Phe Thr 165 170 175		
45	Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val Lys Ala 180 185 190		
50	Asn Gly Leu Ala Ala Phe Leu Leu Gln His Val Gln Glu Leu Pro Val 195 200 205		
55	Pro Leu Ala Leu Pro Leu Glu Ala Ala Thr Cys Lys Lys Tyr Met Ala 210 215 220		
	Lys Leu Arg Thr Thr Val Ser Ala Gln Ser Arg Phe Leu Ser Thr Tyr 225 230 235 240		
	Asp Gly Ala Glu Thr Leu Cys Leu Glu Asp Ile Tyr Thr Glu Asn Val 245 250 255		
	Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly Pro Pro Gln Lys Ser 260 265 270		

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10	Asn	Asp	Asp	Ala	Asp	Thr	Val	Leu	Val	Val	Gly	Glu	Ala	Gly	Ser	Gly	290	295	300
15	Lys	Ser	Thr	Leu	Leu	Gln	Arg	Leu	His	Leu	Leu	Trp	Ala	Ala	Gly	Gln	305	310	315
20	Asp	Phe	Gln	Glu	Phe	Leu	Phe	Val	Phe	Pro	Phe	Ser	Cys	Arg	Gln	Leu	325	330	335
25	Gln	Cys	Met	Ala	Lys	Pro	Leu	Ser	Val	Arg	Thr	Leu	Leu	Phe	Glu	His	340	345	350
30	Cys	Cys	Trp	Pro	Asp	Val	Gly	Gln	Glu	Asp	Ile	Phe	Gln	Leu	Leu	Leu	355	360	365
35	Asp	His	Pro	Asp	Arg	Val	Leu	Leu	Thr	Phe	Asp	Gly	Phe	Asp	Glu	Phe	370	375	380
40	Lys	Phe	Arg	Phe	Thr	Asp	Arg	Glu	Arg	His	Cys	Ser	Pro	Thr	Asp	Pro	385	390	395
45	Thr	Ser	Val	Gln	Thr	Leu	Leu	Phe	Asn	Leu	Leu	Gln	Gly	Asn	Leu	Leu	405	410	415
50	Lys	Asn	Ala	Arg	Lys	Val	Val	Thr	Ser	Arg	Pro	Ala	Ala	Val	Ser	Ala	420	425	430
55	Phe	Leu	Arg	Lys	Tyr	Ile	Arg	Thr	Glu	Phe	Asn	Leu	Lys	Gly	Phe	Ser	435	440	445
	Glu	Gln	Gly	Ile	Glu	Leu	Tyr	Leu	Arg	Lys	Arg	His	His	Glu	Pro	Gly	450	455	460
	Val	Ala	Asp	Arg	Leu	Ile	Arg	Leu	Leu	Gln	Glu	Thr	Ser	Ala	Leu	His	465	470	475
	Gly	Leu	Cys	His	Leu	Pro	Val	Phe	Ser	Trp	Met	Val	Ser	Lys	Cys	His	485	490	495

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	Gln	Glu	Leu	Leu	Leu	Gln	Glu	Gly	Gly	Ser	Pro	Lys	Thr	Thr	Thr	Asp	
					500				505						510		
5	Met	Tyr	Leu	Leu	Ile	Leu	Gln	His	Phe	Leu	Leu	His	Ala	Thr	Pro	Pro	
			515					520					525				
10	Asp	Ser	Ala	Ser	Gln	Gly	Leu	Gly	Pro	Ser	Leu	Leu	Arg	Gly	Arg	Leu	
		530					535					540					
15	Pro	Thr	Leu	Leu	His	Leu	Gly	Arg	Leu	Ala	Leu	Trp	Gly	Leu	Gly	Met	
	545					550					555					560	
20	Cys	Cys	Tyr	Val	Phe	Ser	Ala	Gln	Gln	Leu	Gln	Ala	Ala	Gln	Val	Ser	
					565					570					575		
	Pro	Asp	Asp	Ile	Ser	Leu	Gly	Phe	Leu	Val	Arg	Ala	Lys	Gly	Val	Val	
				580					585					590			
25	Pro	Gly	Ser	Thr	Ala	Pro	Leu	Glu	Phe	Leu	His	Ile	Thr	Phe	Gln	Cys	
			595					600					605				
30	Phe	Phe	Ala	Ala	Phe	Tyr	Leu	Ala	Leu	Ser	Ala	Asp	Val	Pro	Pro	Ala	
		610					615					620					
35	Leu	Leu	Arg	His	Leu	Phe	Asn	Cys	Gly	Arg	Pro	Gly	Asn	Ser	Pro	Met	
	625					630					635					640	
40	Ala	Arg	Leu	Leu	Pro	Thr	Met	Cys	Ile	Gln	Ala	Ser	Glu	Gly	Lys	Asp	
					645					650					655		
45	Ser	Ser	Val	Ala	Ala	Leu	Leu	Gln	Lys	Ala	Glu	Pro	His	Asn	Leu	Gln	
				660					665					670			
	Ile	Thr	Ala	Ala	Phe	Leu	Ala	Gly	Leu	Leu	Ser	Arg	Glu	His	Trp	Gly	
			675					680					685				
50	Leu	Leu	Ala	Glu	Cys	Gln	Thr	Ser	Glu	Lys	Ala	Leu	Leu	Arg	His	Gln	
		690					695					700					
55	Ala	Cys	Ala	Arg	Trp	Cys	Leu	Ala	Arg	Ser	Leu	Arg	Lys	His	Phe	His	
	705					710					715					720	

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	Ser	Ile	Pro	Pro	Ala	Ala	Pro	Gly	Glu	Ala	Lys	Ser	Val	His	Ala	Met	
					725					730					735		
5	Pro	Gly	Phe	Ile	Trp	Leu	Ile	Arg	Ser	Leu	Tyr	Glu	Met	Gln	Glu	Glu	
				740					745					750			
10	Arg	Leu	Ala	Arg	Lys	Ala	Ala	Arg	Gly	Leu	Asn	Val	Gly	His	Leu	Lys	
			755					760					765				
15	Leu	Thr	Phe	Cys	Ser	Val	Gly	Pro	Thr	Glu	Cys	Ala	Ala	Leu	Ala	Phe	
		770					775					780					
20	Val	Leu	Gln	His	Leu	Arg	Arg	Pro	Val	Ala	Leu	Gln	Leu	Asp	Tyr	Asn	
	785					790					795					800	
25	Ser	Val	Gly	Asp	Ile	Gly	Val	Glu	Gln	Leu	Leu	Pro	Cys	Leu	Gly	Val	
					805					810					815		
30	Cys	Lys	Ala	Leu	Tyr	Leu	Arg	Asp	Asn	Asn	Ile	Ser	Asp	Arg	Gly	Ile	
				820					825					830			
35	Cys	Lys	Leu	Ile	Glu	Cys	Ala	Leu	His	Cys	Glu	Gln	Leu	Gln	Lys	Leu	
			835					840					845				
40	Ala	Leu	Phe	Asn	Asn	Lys	Leu	Thr	Asp	Gly	Cys	Ala	His	Ser	Met	Ala	
	850						855					860					
45	Lys	Leu	Leu	Ala	Cys	Arg	Gln	Asn	Phe	Leu	Ala	Leu	Arg	Leu	Gly	Asn	
	865					870					875					880	
50	Asn	Tyr	Ile	Thr	Ala	Ala	Gly	Ala	Gln	Val	Leu	Ala	Glu	Gly	Leu	Arg	
					885					890					895		
55	Gly	Asn	Thr	Ser	Leu	Gln	Phe	Leu	Gly	Phe	Trp	Gly	Asn	Arg	Val	Gly	
				900					905					910			
60	Asp	Glu	Gly	Ala	Gln	Ala	Leu	Ala	Glu	Ala	Leu	Gly	Asp	His	Gln	Ser	
			915					920					925				
65	Leu	Arg	Trp	Leu	Ser	Leu	Val	Gly	Asn	Asn	Ile	Gly	Ser	Val	Gly	Ala	
		930					935					940					
70	Gln	Ala	Leu	Ala	Leu	Met	Leu	Ala	Lys	Asn	Val	Met	Leu	Glu	Glu	Leu	

	945		950		955		960									
5	Cys	Leu	Glu	Glu	Asn	His	Leu	Gln	Asp	Glu	Gly	Val	Cys	Ser	Leu	Ala
					965				970						975	
10	Glu	Gly	Leu	Lys	Lys	Asn	Ser	Ser	Leu	Lys	Ile	Leu	Lys	Leu	Ser	Asn
				980					985					990		
15	Asn	Cys	Ile	Thr	Tyr	Leu	Gly	Ala	Glu	Ala	Leu	Leu	Gln	Ala	Leu	Glu
			995					1000					1005			
20	Arg	Asn	Asp	Thr	Ile	Leu	Glu	Val	Trp	Leu	Arg	Gly	Asn	Thr	Phe	
		1010						1015				1020				
25	Ser	Leu	Glu	Glu	Val	Asp	Lys	Leu	Gly	Cys	Arg	Asp	Thr	Arg	Leu	
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		1040														
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35	<213>	Homo sapiens														
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40	Met	Cys	Ser	Gln	Glu	Ala	Phe	Gln	Ala	Gln	Arg	Ser	Gln	Leu	Val	Glu
	1				5					10				15		
45	Leu	Leu	Val	Ser	Gly	Ser	Leu	Glu	Gly	Phe	Glu	Ser	Val	Leu	Asp	Trp
				20					25					30		
50	Leu	Leu	Ser	Trp	Glu	Val	Leu	Ser	Trp	Glu	Asp	Tyr	Glu	Gly	Phe	His
			35					40				45				
55	Leu	Leu	Gly	Gln	Pro	Leu	Ser	His	Leu	Ala	Arg	Arg	Leu	Leu	Asp	Thr
		50					55				60					
	Val	Trp	Asn	Lys	Gly	Thr	Trp	Ala	Cys	Gln	Lys	Leu	Ile	Ala	Ala	Ala
	65					70				75				80		

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5 Gln Glu Ala Gln Ala Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp
85 90 95
Asp
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Ser Leu His Pro Ala Arg Asp Leu Gln Ser His Arg Pro Ala Ile Val
1 5 10 15
25 Arg Arg Leu His Ser His Val Glu Asn Met Leu Asp Leu Ala Trp Glu
20 25 30
30 Arg Gly Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg Leu Pro Ile
35 40 45
35 Phe Thr Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val
50 55 60
40 Lys Ala Asn Gly Leu Ala Ala Phe Leu Leu Gln His Val Gln Glu Leu
65 70 75 80
Pro Val Pro Leu Ala Leu Pro Leu Glu Ala Ala Thr Cys Lys
85 90
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50 <212> PRT
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	Pro	Ala	Thr	Leu	Gly	Leu	Glu	Glu	Leu	Phe	Ser	Thr	Pro	Gly	His	Leu	
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5	Asn	Asp	Asp	Ala	Asp	Thr	Val	Leu	Val	Val	Gly	Glu	Ala	Gly	Ser	Gly	
				20					25					30			
10	Lys	Ser	Thr	Leu	Leu	Gln	Arg	Leu	His	Leu	Leu	Trp	Ala	Ala	Gly	Gln	
			35					40					45				
15	Asp	Phe	Gln	Glu	Phe	Leu	Phe	Val	Phe	Pro	Phe	Ser	Cys	Arg	Gln	Leu	
	50						55					60					
20	Gln	Cys	Met	Ala	Lys	Pro	Leu	Ser	Val	Arg	Thr	Leu	Leu	Phe	Glu	His	
	65					70				75					80		
25	Cys	Cys	Trp	Pro	Asp	Val	Gly	Gln	Glu	Asp	Ile	Phe	Gln	Leu	Leu	Leu	
					85					90				95			
30	Asp	His	Pro	Asp	Arg	Val	Leu	Leu	Thr	Phe	Asp	Gly	Phe	Asp	Glu	Phe	
				100					105					110			
35	Lys	Phe	Arg	Phe	Thr	Asp	Arg	Glu	Arg	His	Cys	Ser	Pro	Thr	Asp	Pro	
			115					120					125				
40	Thr	Ser	Val	Gln	Thr	Leu	Leu	Phe	Asn	Leu	Leu	Gln	Gly	Asn	Leu	Leu	
	130						135					140					
45	Lys	Asn	Ala	Arg	Lys	Val	Val	Thr	Ser	Arg	Pro	Ala	Ala	Val	Ser	Ala	
	145					150				155					160		
50	Phe	Leu	Arg	Lys	Tyr	Ile	Arg	Thr	Glu	Phe	Asn	Leu	Lys	Gly	Phe	Ser	
				165					170						175		
55	Glu	Gln	Gly	Ile	Glu	Leu	Tyr	Leu	Arg	Lys	Arg	His	His	Glu	Pro	Gly	
				180					185					190			
60	Val	Ala	Asp	Arg	Leu	Ile	Arg	Leu	Leu	Gln	Glu	Thr	Ser	Ala	Leu	His	
			195					200					205				
65	Gly	Leu	Cys	His	Leu	Pro	Val	Phe	Ser	Trp	Met	Val	Ser	Lys	Cys	His	
	210						215					220					

Gln Glu Leu Leu Leu Gln Glu Gly Gly Ser Pro Lys Thr Thr Thr Asp
 225 230 235 240

5 Met Tyr Leu Leu Ile Leu Gln His Phe Leu Leu His Ala Thr Pro Pro
 245 250 255

10 Asp Ser Ala Ser Gln Gly Leu Gly Pro Ser Leu Leu Arg Gly Arg Leu
 260 265 270

15 Pro Thr Leu Leu His Leu Gly Arg Leu Ala Leu Trp Gly Leu Gly Met
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Cys Cys Tyr Val Phe Ser Ala Gln Gln Leu Gln Ala Ala Gln Val Ser
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25 <210> 8

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30 <213> Homo sapiens

35 <400> 8

Arg Ser Leu Tyr Glu Met Gln Glu Glu Arg Leu Ala Arg Lys Ala Ala
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40 Arg Gly Leu Asn Val Gly His Leu Lys Leu Thr Phe
 20 25

45 <210> 9

<211> 28

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50 <213> Homo sapiens

55 <400> 9

Cys Ser Val Gly Pro Thr Glu Cys Ala Ala Leu Ala Phe Val Leu Gln

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5	His Leu Arg	Arg Pro Val Ala Leu	Gln Leu Asp Tyr	
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	Val Cys Lys Ala Leu Tyr Leu Arg Asp			
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35				
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	His Cys Glu Gln Leu Gln Lys Leu Ala Leu Phe Asn			
45		20	25	
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1 5 10 15

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Cys Arg Gln Asn Phe Leu Ala Leu Arg Leu Gly Asn
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Asn Tyr Ile Thr Ala Ala Gly Ala Gln Val Leu Ala Glu Gly Leu Arg
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Gly Asn Thr Ser Leu Gln Phe Leu Gly Phe Trp Gly
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Asp His Gln Ser Leu Arg Trp Leu Ser Leu Val Gly
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Lys Asn Val Met Leu Glu Glu Leu Cys Leu Glu Glu
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<213> Homo sapiens

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Asn His Leu Gln Asp Glu Gly Val Cys Ser Leu Ala Glu Gly Leu Lys
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Lys Asn Ser Ser Leu Lys Ile Leu Lys Leu Ser Asn
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Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly
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   1                    5

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35 <212> PRT
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45 Val Thr His Ile Arg Asn Thr Gln Cys Leu Val Asp Asn Leu Leu Lys
   20                    25                    30

50 Asn Asp Tyr Phe Ser Ala Glu Asp Ala Glu Ile Val Cys Ala Cys Pro
   35                    40                    45

55 Thr Gln Pro Asp Lys Val Arg Lys Ile Leu Asp Leu Val Gln Ser Lys
   50                    55                    60

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Gly Glu Glu Val Ser Glu Phe Phe Leu Tyr Leu Leu Gln Gln Leu Ala
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Asp Ala Tyr Val Asp Leu Arg Pro Trp Leu Leu Glu
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Gln Met Thr Glu Ala Cys Leu Asn Gln Ser Leu Asp Ala Leu Leu Ser
 20 25 30

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Arg Asp Leu Ile Met Lys Glu Asp Tyr Glu Leu Val Ser Thr Lys Pro
 35 40 45

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Thr Arg Thr Ser Lys Val Arg Gln Leu Leu Asp Thr Thr Asp Ile Gln
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Gly Glu Glu Phe Ala Lys Val Ile Val Gln Lys Leu Lys Asp Asn Lys
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Gln Met Gly Leu Gln Pro Tyr Pro Glu Ile Leu Val
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<400> 22

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Glu Arg Pro Ser Glu Thr Ile Asp Arg Glu Arg Lys Arg Leu Val Glu
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 5 Thr Leu Gln Ala Asp Ser Gly Leu Leu Leu Asp Ala Leu Val Ala Arg
 20 25 30
 10 Gly Val Leu Thr Gly Pro Glu Tyr Glu Ala Leu Asp Ala Leu Pro Asp
 35 40 45
 Ala Glu Arg Arg Val Arg Arg Leu Leu Leu Leu Val Gln Ser Lys Gly
 50 55 60
 15 Glu Ala Ala Cys Gln Glu Leu Leu Arg Cys Ala Gln Gln Thr Val Ser
 65 70 75 80
 20 Met Pro Asp Pro Ala Trp Asp Trp Gln His Val Gly Pro
 85 90
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 40 Gly Ala Glu Val Leu Val Glu Gly Leu Val Leu Gln Tyr Leu Tyr Gln
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 35 40 45
 50 Thr Gly Leu Arg Lys Thr Met Leu Leu Leu Asp Ile Leu Pro Ser Arg
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 Gly Pro Lys Ala Phe Asp Thr Phe Leu Asp Ser Leu Gln Glu Phe Pro
 65 70 75 80
 55 Trp Val Arg Glu Lys Leu Lys Lys Ala Arg Glu Glu Ala Met

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 25 Asp Ile Ile Thr Leu Glu Met Arg Glu Leu Ile Gln Ala Lys Val Gly
 35 40 45
 Ser Phe Ser Gln Asn Val Glu Leu Leu Asn Leu Leu Pro Lys Arg Gly
 50 55 60
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 55 Ser Ser His Leu Lys Val Asp Glu Ile Leu Glu Val Leu Ile Ala Lys
 20 25 30

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5 Gln Val Leu Asn Ser Asp Asn Gly Asp Met Ile Asn Ser Cys Gly Thr
35 40 45

10 Val Arg Glu Lys Arg Arg Glu Ile Val Lys Ala Val Gln Arg Arg Gly
50 55 60

15 Asp Val Ala Phe Asp Ala Phe Tyr Asp Ala Leu Arg Ser Thr Gly His
65 70 75 80

20 Glu Gly Leu Ala Glu Val Leu Glu Pro Leu Ala
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30 Leu Cys Glu Ile Glu Cys Arg Ala Leu Ser Thr Ala His Thr Arg Leu
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35 Ile His Asp Phe Glu Pro Arg Asp Ala Leu Thr Tyr Leu Glu Gly Lys
20 25 30

40 Asn Ile Phe Thr Glu Asp His Ser Glu Leu Ile Ser Lys Met Ser Thr
35 40 45

45 Arg Leu Glu Arg Ile Ala Asn Phe Leu Arg Ile Tyr Arg Arg Gln Ala
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50 Ser Glu Leu Gly Pro Leu Ile Asp Phe Phe Asn Tyr Asn Asn Gln Ser
65 70 75 80

55 His Leu Ala Asp Phe Leu Glu Asp Tyr Ile
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Met Asp Glu Ala Asp Arg Arg Leu Leu Arg Arg Cys Arg Leu Arg Leu
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15 Val Glu Glu Leu Gln Val Asp Gln Leu Trp Asp Val Leu Leu Ser Arg
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20 Glu Leu Phe Arg Pro His Met Ile Glu Asp Ile Gln Arg Ala Gly Ser
35 40 45

25 Gly Ser Arg Arg Asp Gln Ala Arg Gln Leu Ile Ile Asp Leu Glu Thr
50 55 60

Arg Gly Ser Gln Ala Leu Pro Leu Phe Ile Ser Cys Leu Glu Asp Thr
65 70 75 80

30 Gly Gln Asp Met Leu Ala Ser Phe Leu Arg Thr Asn Arg
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Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
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55 Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
35 40 45

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5 Asn Glu Ser Leu Gly Ser Leu Asn Ser Leu Ala Cys Leu Leu Asp His
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10 Thr Thr Gly Ile Leu Asn Glu Gln Gly Glu Thr Ile Phe Ile Leu Gly
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15 Asp Ala Gly Val Gly Lys Ser Met Leu Leu Gln Arg Leu Gln Ser Leu
35 40 45

20 Trp Ala Thr Gly Arg Leu Asp Ala Gly Val Lys Phe Phe Phe His Phe
50 55 60

25 Arg Cys Arg Met Phe Ser Cys Phe Lys Glu Ser Asp Arg Leu Cys Leu
65 70 75 80

30 Gln Asp Leu Leu Phe Lys His Tyr Cys Tyr Pro Glu Arg Asp Pro Glu
85 90 95

35 Glu Val Phe Ala Phe Leu Leu Arg Phe Pro His Val Ala Leu Phe Thr
100 105 110

40 Phe Asp Gly Leu Asp Glu Leu His Ser Asp Leu Asp Leu Ser Arg Val
115 120 125

45 Pro Asp Ser Ser Cys Pro Trp Glu Pro Ala His Pro Leu Val Leu Leu
130 135 140

50 Ala Asn Leu Leu Ser Gly Lys Leu Leu Lys Gly Ala Ser Lys Leu Leu
145 150 155 160

55 Thr Ala Arg Thr Gly Ile Glu Val Pro Arg Gln Phe Leu Arg Lys Lys
165 170 175

Val Leu Leu Arg Gly Phe Ser Pro Ser His Leu Arg Ala Tyr Ala Arg
180 185 190

Arg Met Phe Pro Glu Arg Ala Leu Gln Asp Arg Leu Leu Ser Gln Leu
195 200 205

Glu Ala Asn Pro Asn Leu Cys Ser Leu Cys Ser Val Pro Leu Phe Cys

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5	Trp Ile Ile Phe Arg Cys Phe Gln His Phe Arg Ala Ala Phe Glu Gly 225 230 235 240		
10	Ser Pro Gln Leu Pro Asp Cys Thr Met Thr Leu Thr Asp Val Phe Val 245 250 255		
15	Leu Val Thr Glu Val His Leu Asn Arg Met Gln Pro Ser Ser Leu Val 260 265 270		
20	Gln Arg Asn Thr Arg Ser Pro Val Glu Thr Leu His Ala Gly Arg Asp 275 280 285		
25	Thr Leu Cys Ser Leu Gly Gln Val Ala His Arg Gly Met Glu Lys Ser 290 295 300		
30	Leu Phe Val Phe Thr Gln Glu Glu Val Gln Ala Ser Gly Leu Gln Glu 305 310 315 320		
35	<210> 31 <211> 308 <212> PRT <213> Homo sapiens <400> 31		
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45	Lys Leu Ser Lys Leu Lys Gly Glu Pro Gly Trp Val Thr Ile His Gly 20 25 30		
50	Met Ala Gly Cys Gly Lys Ser Val Leu Ala Ala Glu Ala Val Arg Asp 35 40 45		
55	His Ser Leu Leu Glu Gly Cys Phe Pro Gly Gly Val His Trp Val Ser 50 55 60		
	Val Gly Lys Gln Asp Lys Ser Gly Leu Leu Met Lys Leu Gln Asn Leu 65 70 75 80		

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5	Cys Thr Arg Leu Asp Gln Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu	85	90	95
10	Asn Ile Glu Glu Ala Lys Asp Arg Leu Arg Ile Leu Met Leu Arg Lys	100	105	110
15	His Pro Arg Ser Leu Leu Ile Leu Asp Asp Val Trp Asp Ser Trp Val	115	120	125
20	Leu Lys Ala Phe Asp Ser Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp	130	135	140
25	Lys Ser Val Thr Asp Ser Val Met Gly Pro Lys Tyr Val Val Pro Val	145	150	155
30	Glu Ser Ser Leu Gly Lys Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe	165	170	175
35	Val Asn Met Lys Lys Ala Asp Leu Pro Glu Gln Ala His Ser Ile Ile	180	185	190
40	Lys Glu Cys Lys Gly Ser Pro Leu Val Val Ser Leu Ile Gly Ala Leu	195	200	205
45	Leu Arg Asp Phe Pro Asn Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln	210	215	220
50	Asn Lys Gln Phe Lys Arg Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu	225	230	235
55	Ala Leu Asp Glu Ala Met Ser Ile Ser Val Glu Met Leu Arg Glu Asp	245	250	255
60	Ile Lys Asp Tyr Tyr Thr Asp Leu Ser Ile Leu Gln Lys Asp Val Lys	260	265	270
65	Val Pro Thr Lys Val Leu Cys Ile Leu Trp Asp Met Glu Thr Glu Glu	275	280	285
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50	Ser Val Gly 805	Asp Ile Gly Val Glu Gln Leu Leu 810	Pro Cys Leu Gly Val 815
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 15 Leu Arg Trp Leu Ser Leu Val Gly Asn Asn Ile Gly Ser Val Gly Ala
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 20 Gln Ala Leu Ala Leu Met Leu Ala Lys Asn Val Met Leu Glu Glu Leu
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	Lys	Leu	Arg	Thr	Thr	Val	Ser	Ala	Gln	Ser	Arg	Phe	Leu	Ser	Thr	Tyr	225	230	235	240
5	Asp	Gly	Ala	Glu	Thr	Leu	Cys	Leu	Glu	Asp	Ile	Tyr	Thr	Glu	Asn	Val	245	250	255	
10	Leu	Glu	Val	Trp	Ala	Asp	Val	Gly	Met	Ala	Gly	Pro	Pro	Gln	Lys	Ser	260	265	270	
15	Pro	Ala	Thr	Leu	Gly	Leu	Glu	Glu	Leu	Phe	Ser	Thr	Pro	Gly	His	Leu	275	280	285	
20	Asn	Asp	Asp	Ala	Asp	Thr	Val	Leu	Val	Val	Gly	Glu	Ala	Gly	Ser	Gly	290	295	300	
25	Lys	Ser	Thr	Leu	Leu	Gln	Arg	Leu	His	Leu	Leu	Trp	Ala	Ala	Gly	Gln	305	310	315	320
30	Asp	Phe	Gln	Glu	Phe	Leu	Phe	Val	Phe	Pro	Phe	Ser	Cys	Arg	Gln	Leu	325	330	335	
35	Gln	Cys	Met	Ala	Lys	Pro	Leu	Ser	Val	Arg	Thr	Leu	Leu	Phe	Glu	His	340	345	350	
40	Cys	Cys	Trp	Pro	Asp	Val	Gly	Gln	Glu	Asp	Ile	Phe	Gln	Leu	Leu	Leu	355	360	365	
45	Asp	His	Pro	Asp	Arg	Val	Leu	Leu	Thr	Phe	Asp	Gly	Phe	Asp	Glu	Phe	370	375	380	
50	Lys	Phe	Arg	Phe	Thr	Asp	Arg	Glu	Arg	His	Cys	Ser	Pro	Thr	Asp	Pro	385	390	395	400
55	Thr	Ser	Val	Gln	Thr	Leu	Leu	Phe	Asn	Leu	Leu	Gln	Gly	Asn	Leu	Leu	405	410	415	
	Lys	Asn	Ala	Arg	Lys	Val	Val	Thr	Ser	Arg	Pro	Ala	Ala	Val	Ser	Ala	420	425	430	
	Phe	Leu	Arg	Lys	Tyr	Ile	Arg	Thr	Glu	Phe	Asn	Leu	Lys	Gly	Phe	Ser	435	440	445	
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15	Gln 505	Glu 510	Leu 515	Leu 520
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25	Pro 545	Thr 550	Leu 555	Leu 560
30	Cys 565	Cys 570	Tyr 575	Val 580
35	Pro 585	Asp 590	Asp 595	Ile 600
40	Phe 610	Phe 615	Ala 620	Ala 625
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55	Ser 670	Ser 675	Val 680	Ala 685

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20	Thr	Trp	Ala	Cys	Gln	Lys	Leu	Ile	Ala	Ala	Ala	Gln	Glu	Ala	Gln	Ala
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25	Asp	Ser	Gln	Ser	Pro	Lys	Leu	His	Gly	Cys	Trp	Asp	Pro	His	Ser	Leu
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15	Asn Asp Asp Ala Asp Thr Val Leu Val Val Gly Glu Ala Gly Ser Gly 290 295 300		
20	Lys Ser Thr Leu Leu Gln Arg Leu His Leu Leu Trp Ala Ala Gly Gln 305 310 315 320		
25	Asp Phe Gln Glu Phe Leu Phe Val Phe Pro Phe Ser Cys Arg Gln Leu 325 330 335		
30	Gln Cys Met Ala Lys Pro Leu Ser Val Arg Thr Leu Leu Phe Glu His 340 345 350		
35	Cys Cys Trp Pro Asp Val Gly Gln Glu Asp Ile Phe Gln Leu Leu Leu 355 360 365		
40	Asp His Pro Asp Arg Val Leu Leu Thr Phe Asp Gly Phe Asp Glu Phe 370 375 380		
45	Lys Phe Arg Phe Thr Asp Arg Glu Arg His Cys Ser Pro Thr Asp Pro 385 390 395 400		
50	Thr Ser Val Gln Thr Leu Leu Phe Asn Leu Leu Gln Gly Asn Leu Leu 405 410 415		
55	Lys Asn Ala Arg Lys Val Val Thr Ser Arg Pro Ala Ala Val Ser Ala 420 425 430		
60	Phe Leu Arg Lys Tyr Ile Arg Thr Glu Phe Asn Leu Lys Gly Phe Ser 435 440 445		
65	Glu Gln Gly Ile Glu Leu Tyr Leu Arg Lys Arg His His Glu Pro Gly 450 455 460		
70	Val Ala Asp Arg Leu Ile Arg Leu Leu Gln Glu Thr Ser Ala Leu His 465 470 475 480		

5	Gly	Leu	Cys	His	Leu	Pro	Val	Phe	Ser	Trp	Met	Val	Ser	Lys	Cys	His	485	490	495
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15	Met	Tyr	Leu	Leu	Ile	Leu	Gln	His	Phe	Leu	Leu	His	Ala	Thr	Pro	Pro	515	520	525
20	Asp	Ser	Ala	Ser	Gln	Gly	Leu	Gly	Pro	Ser	Leu	Leu	Arg	Gly	Arg	Leu	530	535	540
25	Pro	Thr	Leu	Leu	His	Leu	Gly	Arg	Leu	Ala	Leu	Trp	Gly	Leu	Gly	Met	545	550	555
30	Cys	Cys	Tyr	Val	Phe	Ser	Ala	Gln	Gln	Leu	Gln	Ala	Ala	Gln	Val	Ser	565	570	575
35	Pro	Asp	Asp	Ile	Ser	Leu	Gly	Phe	Leu	Val	Arg	Ala	Lys	Gly	Val	Val	580	585	590
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45	Phe	Phe	Ala	Ala	Phe	Tyr	Leu	Ala	Leu	Ser	Ala	Asp	Val	Pro	Pro	Ala	610	615	620
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65	Ile	Thr	Ala	Ala	Phe	Leu	Ala	Gly	Leu	Leu	Ser	Arg	Glu	His	Trp	Gly	675	680	685
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10	Val Leu Ser Trp Glu Asp Tyr Glu Gly Phe His Leu Leu Gly Gln Pro 65 70 75 80		
15	Leu Ser His Leu Ala Arg Arg Leu Leu Asp Thr Val Trp Asn Lys Gly 85 90 95		
20	Thr Trp Ala Cys Gln Lys Leu Ile Ala Ala Ala Gln Glu Ala Gln Ala 100 105 110		
25	Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp Asp Pro His Ser Leu 115 120 125		
30	His Pro Ala Arg Asp Leu Gln Ser His Arg Pro Ala Ile Val Arg Arg 130 135 140		
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40	Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg Leu Pro Ile Phe Thr 165 170 175		
45	Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val Lys Ala 180 185 190		
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55	Pro Leu Ala Leu Pro Leu Glu Ala Ala Thr Cys Lys Lys Tyr Met Ala 210 215 220		
	Lys Leu Arg Thr Thr Val Ser Ala Gln Ser Arg Phe Leu Ser Thr Tyr 225 230 235 240		
	Asp Gly Ala Glu Thr Leu Cys Leu Glu Asp Ile Tyr Thr Glu Asn Val 245 250 255		
	Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly Pro Pro Gln Lys Ser 260 265 270		

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			515					520					525			
10	Asp	Ser	Ala	Ser	Gln	Gly	Leu	Gly	Pro	Ser	Leu	Leu	Arg	Gly	Arg	Leu
		530					535					540				
15	Pro	Thr	Leu	Leu	His	Leu	Gly	Arg	Leu	Ala	Leu	Trp	Gly	Leu	Gly	Met
	545					550					555					560
20	Cys	Cys	Tyr	Val	Phe	Ser	Ala	Gln	Gln	Leu	Gln	Ala	Ala	Gln	Val	Ser
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25	Pro	Asp	Asp	Ile	Ser	Leu	Gly	Phe	Leu	Val	Arg	Ala	Lys	Gly	Val	Val
				580					585					590		
30	Pro	Gly	Ser	Thr	Ala	Pro	Leu	Glu	Phe	Leu	His	Ile	Thr	Phe	Gln	Cys
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35	Phe	Phe	Ala	Ala	Phe	Tyr	Leu	Ala	Leu	Ser	Ala	Asp	Val	Pro	Pro	Ala
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			675					680					685			
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10	Arg	Leu	Ala	Arg	Lys	Ala	Ala	Arg	Gly	Leu	Asn	Val	Gly	His	Leu	Lys	
			755					760					765				
15	Leu	Thr	Phe	Cys	Ser	Val	Gly	Pro	Thr	Glu	Cys	Ala	Ala	Leu	Ala	Phe	
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20	Val	Leu	Gln	His	Leu	Arg	Arg	Pro	Val	Ala	Leu	Gln	Leu	Asp	Tyr	Asn	
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25	Ser	Val	Gly	Asp	Ile	Gly	Val	Glu	Gln	Leu	Leu	Pro	Cys	Leu	Gly	Val	
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30	Cys	Lys	Ala	Leu	Tyr	Leu	Arg	Asp	Asn	Asn	Ile	Ser	Asp	Arg	Gly	Ile	
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35	Cys	Lys	Leu	Ile	Glu	Cys	Ala	Leu	His	Cys	Glu	Gln	Leu	Gln	Lys	Leu	
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15	Asn Cys Ile Thr Tyr Leu Gly Ala Glu Ala Leu Leu Gln Ala Leu Glu	995	1000	1005
20	Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly Asn Thr Phe	1010	1015	1020
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 Ser Leu Glu Gly Phe Glu Ser Val Leu Asp Trp Leu Leu Ser Trp Glu
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20	Asp	Ser	Gln 115	Ser	Pro	Lys	Leu	His 120	Gly	Cys	Trp	Asp	Pro 125	His	Ser	Leu
25	His 130	Pro	Ala	Arg	Asp	Leu	Gln 135	Ser	His	Arg	Pro	Ala 140	Ile	Val	Arg	Arg
30	Leu 145	His	Ser	His	Val	Glu 150	Asn	Met	Leu	Asp	Leu 155	Ala	Trp	Glu	Arg	Gly 160
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55	Lys 225	Leu	Arg	Thr	Thr	Val 230	Ser	Ala	Gln	Ser	Arg 235	Phe	Leu	Ser	Thr	Tyr 240
60	Asp	Gly	Ala	Glu 245	Thr	Leu	Cys	Leu	Glu 250	Asp	Ile	Tyr	Thr	Glu 255	Asn	Val
65	Leu	Glu	Val	Trp 260	Ala	Asp	Val	Gly	Met 265	Ala	Gly	Pro	Pro	Gln 270	Lys	Ser
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45	Phe	Leu	Arg	Lys	Tyr	Ile	Arg	Thr	Glu	Phe	Asn	Leu	Lys	Gly	Phe	Ser	
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55	Val	Ala	Asp	Arg	Leu	Ile	Arg	Leu	Leu	Gln	Glu	Thr	Ser	Ala	Leu	His	
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60	Gly	Leu	Cys	His	Leu	Pro	Val	Phe	Ser	Trp	Met	Val	Ser	Lys	Cys	His	
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15	Cys	Cys	Tyr	Val	Phe	Ser	Ala	Gln	Gln	Leu	Gln	Ala	Ala	Gln	Val	Ser
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750

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 40 Lys Leu Leu Ala Cys Arg Gln Asn Phe Leu Ala Leu Arg Leu Gly Asn
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 45 Asn Tyr Ile Thr Ala Ala Gly Ala Gln Val Leu Ala Glu Gly Leu Arg
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	Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly Asn Thr Phe	
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<213> Homo sapiens

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15 <213> Homo sapiens

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Ala Phe Gln Ala Gln Arg Ser Gln Leu Val Glu Leu Leu Val Ser Gly
35 40 45

25

Ser Leu Glu Gly Phe Glu Ser Val Leu Asp Trp Leu Leu Ser Trp Glu
50 55 60

30

Val Leu Ser Trp Glu Asp Tyr Glu Gly Phe His Leu Leu Gly Gln Pro
65 70 75 80

35

Leu Ser His Leu Ala Arg Arg Leu Leu Asp Thr Val Trp Asn Lys Gly
85 90 95

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Thr Trp Ala Cys Gln Lys Leu Ile Ala Ala Ala Gln Glu Ala Gln Ala
100 105 110

45

Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp Asp Pro His Ser Leu
115 120 125

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His Pro Ala Arg Asp Leu Gln Ser His Arg Pro Ala Ile Val Arg Arg
130 135 140

Leu His Ser His Val Glu Asn Met Leu Asp Leu Ala Trp Glu Arg Gly
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Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg Leu Pro Ile Phe Thr
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Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val Lys Ala
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10	Lys Leu Arg Thr Thr Val Ser Ala Gln Ser Arg Phe Leu Ser Thr Tyr	225	230	235
15	Asp Gly Ala Glu Thr Leu Cys Leu Glu Asp Ile Tyr Thr Glu Asn Val	245	250	255
20	Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly Ser Pro Gln Lys Ser	260	265	270
25	Pro Ala Thr Leu Gly Leu Glu Glu Leu Phe Ser Thr Pro Gly His Leu	275	280	285
30	Asn Asp Asp Ala Asp Thr Val Leu Val Val Gly Glu Ala Gly Ser Gly	290	295	300
35	Lys Ser Thr Leu Leu Gln Arg Leu His Leu Leu Trp Ala Ala Gly Gln	305	310	315
40	Asp Phe Gln Glu Phe Leu Phe Val Phe Pro Phe Ser Cys Arg Gln Leu	325	330	335
45	Gln Cys Met Ala Lys Pro Leu Ser Val Arg Thr Leu Leu Phe Glu His	340	345	350
50	Cys Cys Trp Pro Asp Val Gly Gln Glu Asp Ile Phe Gln Leu Leu Leu	355	360	365
55	Asp His Pro Asp Arg Val Leu Leu Thr Phe Asp Gly Phe Asp Glu Phe	370	375	380
60	Lys Phe Arg Phe Thr Asp Arg Glu Arg His Cys Ser Pro Thr Asp Pro	385	390	395
65	Thr Ser Val Gln Thr Leu Leu Phe Asn Leu Leu Gln Gly Asn Leu Leu	405	410	415

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	Lys	Asn	Ala	Arg	Lys	Val	Val	Thr	Ser	Arg	Pro	Ala	Ala	Val	Ser	Ala	
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5	Phe	Leu	Arg	Lys	Tyr	Ile	Arg	Thr	Glu	Phe	Asn	Leu	Lys	Gly	Phe	Ser	
			435					440					445				
10	Glu	Gln	Gly	Ile	Glu	Leu	Tyr	Leu	Arg	Lys	Arg	His	His	Glu	Pro	Gly	
		450					455					460					
15	Val	Ala	Asp	Arg	Leu	Ile	Arg	Leu	Leu	Gln	Glu	Thr	Ser	Ala	Leu	His	
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20	Gly	Leu	Cys	His	Leu	Pro	Val	Phe	Ser	Trp	Met	Val	Ser	Lys	Cys	His	
					485					490					495		
25	Gln	Glu	Leu	Leu	Leu	Gln	Glu	Gly	Gly	Ser	Pro	Lys	Thr	Thr	Thr	Asp	
				500					505					510			
30	Met	Tyr	Leu	Leu	Ile	Leu	Gln	His	Phe	Leu	Leu	His	Ala	Thr	Pro	Pro	
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35	Asp	Ser	Ala	Ser	Gln	Gly	Leu	Gly	Pro	Ser	Leu	Leu	Arg	Gly	Arg	Leu	
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40	Pro	Thr	Leu	Leu	His	Leu	Gly	Arg	Leu	Ala	Leu	Trp	Gly	Leu	Gly	Met	
	545					550					555					560	
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				580					585					590			
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	610						615					620					
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10	Ile Thr Ala Ala Phe Leu Ala Gly Leu Leu Ser Arg Glu His Trp Gly 675 680 685		
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20	Ala Cys Ala Arg Trp Cys Leu Ala Arg Ser Leu Arg Lys His Phe His 705 710 715 720		
25	Ser Ile Pro Pro Ala Ala Pro Gly Glu Ala Lys Ser Val His Ala Met 725 730 735		
30	Pro Gly Phe Ile Trp Leu Ile Arg Ser Leu Tyr Glu Met Gln Glu Glu 740 745 750		
35	Arg Leu Ala Arg Lys Ala Ala Arg Gly Leu Asn Val Gly His Leu Lys 755 760 765		
40	Leu Thr Phe Cys Ser Val Gly Pro Thr Glu Cys Ala Ala Leu Ala Phe 770 775 780		
45	Val Leu Gln His Leu Arg Arg Pro Val Ala Leu Gln Leu Asp Tyr Asn 785 790 795 800		
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	Cys Lys Leu Ile Glu Cys Ala Leu His Cys Glu Gln Leu Gln Lys Leu 835 840 845		
	Ala Leu Phe Asn Asn Lys Leu Thr Asp Gly Cys Ala His Ser Met Ala 850 855 860		
	Lys Leu Leu Ala Cys Arg Gln Asn Phe Leu Ala Leu Arg Leu Gly Asn 865 870 875 880		

5 Asn Tyr Ile Thr Ala Ala Gly Ala Gln Val Leu Ala Glu Gly Leu Arg
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 Gly Asn Thr Ser Leu Gln Phe Leu Gly Phe Trp Arg Asn Arg Val Gly
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 915 920 925
 15 Leu Arg Trp Leu Ser Leu Val Gly Asn Asn Ile Gly Ser Val Gly Ala
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 20 Gln Ala Leu Ala Leu Met Leu Ala Lys Asn Val Met Leu Glu Glu Leu
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 965 970 975
 Glu Gly Leu Lys Lys Asn Ser Ser Leu Lys Ile Leu Lys Leu Ser Asn
 980 985 990
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 35 Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly Asn Thr Phe
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Ser Leu Glu Gly Phe Glu Ser Val Leu Asp Trp Leu Leu Ser Trp Glu
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Val Leu Ser Trp Glu Asp Tyr Glu Gly Phe His Leu Leu Gly Gln Pro
65 70 75 80

Leu Ser His Leu Ala Arg Arg Leu Leu Asp Thr Val Trp Asn Lys Gly
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Thr Trp Ala Cys Gln Lys Leu Ile Ala Ala Ala Gln Glu Ala Gln Ala
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Asp Ser Gln Ser Pro Lys Leu His Gly Cys Trp Asp Pro His Ser Leu
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His Pro Ala Arg Asp Leu Gln Ser His Arg Pro Ala Ile Val Arg Arg
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Leu His Ser His Val Glu Asn Met Leu Asp Leu Ala Trp Glu Arg Gly
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Phe Val Ser Gln Tyr Glu Cys Asp Glu Ile Arg Leu Pro Ile Phe Thr
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Pro Ser Gln Arg Ala Arg Arg Leu Leu Asp Leu Ala Thr Val Lys Ala
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Asn Gly Leu Ala Ala Phe Leu Leu Gln His Val Gln Glu Leu Pro Val
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15 Leu Glu Val Trp Ala Asp Val Gly Met Ala Gly Ser Pro Gln Lys Ser
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20 Pro Ala Thr Leu Gly Leu Glu Glu Leu Phe Ser Thr Pro Gly His Leu
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25 Asn Asp Asp Ala Asp Thr Val Leu Val Val Gly Glu Ala Gly Ser Gly
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30 Lys Ser Thr Leu Leu Gln Arg Leu His Leu Leu Trp Ala Ala Gly Gln
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35 Asp Phe Gln Glu Phe Leu Phe Val Phe Pro Phe Ser Cys Arg Gln Leu
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40 Gln Cys Met Ala Lys Pro Leu Ser Val Arg Thr Leu Leu Phe Glu His
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45 Cys Cys Trp Pro Asp Val Gly Gln Glu Asp Ile Phe Gln Leu Leu Leu
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50 Asp His Pro Asp Arg Val Leu Leu Thr Phe Asp Gly Phe Asp Glu Phe
 370 375 380

55 Lys Phe Arg Phe Thr Asp Arg Glu Arg His Cys Ser Pro Thr Asp Pro
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Lys Asn Ala Arg Lys Val Val Thr Ser Arg Pro Ala Ala Val Ser Ala
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20	Gln	Glu	Leu	Leu	Leu	Gln	Glu	Gly	Gly	Ser	Pro	Lys	Thr	Thr	Thr	Asp	
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25	Met	Tyr	Leu	Leu	Ile	Leu	Gln	His	Phe	Leu	Leu	His	Ala	Thr	Pro	Pro	
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35	Pro	Thr	Leu	Leu	His	Leu	Gly	Arg	Leu	Ala	Leu	Trp	Gly	Leu	Gly	Met	
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40	Cys	Cys	Tyr	Val	Phe	Ser	Ala	Gln	Gln	Leu	Gln	Ala	Ala	Gln	Val	Ser	
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45	Pro	Asp	Asp	Ile	Ser	Leu	Gly	Phe	Leu	Val	Arg	Ala	Lys	Gly	Val	Val	
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660

665

670

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675 680 685

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690 695 700

15 Ala Cys Ala Arg Trp Cys Leu Ala Arg Ser Leu Arg Lys His Phe His
705 710 715 720

20 Ser Ile Pro Pro Ala Ala Pro Gly Glu Ala Lys Ser Val His Ala Met
725 730 735

25 Pro Gly Phe Ile Trp Leu Ile Arg Ser Leu Tyr Glu Met Gln Glu Glu
740 745 750

30 Arg Leu Ala Arg Lys Ala Ala Arg Gly Leu Asn Val Gly His Leu Lys
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35 Leu Thr Phe Cys Ser Val Gly Pro Thr Glu Cys Ala Ala Leu Ala Phe
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45 Ser Val Gly Asp Ile Gly Val Glu Gln Leu Leu Pro Cys Leu Gly Val
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820 825 830

55 Cys Lys Leu Ile Glu Cys Ala Leu His Cys Glu Gln Leu Gln Lys Leu
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850 855 860

65 Lys Leu Leu Ala Cys Arg Gln Asn Phe Leu Ala Leu Arg Leu Gly Asn
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70 Asn Tyr Ile Thr Ala Ala Gly Ala Gln Val Leu Ala Glu Gly Leu Arg
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 15 Leu Arg Trp Leu Ser Leu Val Gly Asn Asn Ile Gly Ser Val Gly Ala
 930 935 940

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 25 Cys Leu Glu Glu Asn His Leu Gln Asp Glu Gly Val Cys Ser Leu Ala
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 40 Arg Asn Asp Thr Ile Leu Glu Val Trp Leu Arg Gly Asn Thr Phe
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725 730 735

15 Pro Gly Phe Ile Trp Leu Ile Arg Ser Leu Tyr Glu Met Gln Glu Glu
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805 810 815

35 Cys Lys Ala Leu Tyr Leu Arg Asp Asn Asn Ile Ser Asp Arg Gly Ile
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